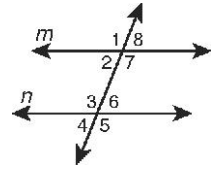


Parallel Lines III

Use the figure for Problems 1–4. Tell whether lines  $m$  and  $n$  must be parallel from the given information. If they are, state your reasoning (use a converse).



1.  $\angle 5 \cong \angle 1$

\_\_\_\_\_

\_\_\_\_\_

2.  $\angle 8 \cong \angle 6$

\_\_\_\_\_

\_\_\_\_\_

3.  $m\angle 4 + m\angle 3 = 180$

\_\_\_\_\_

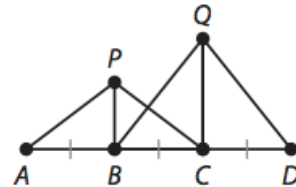
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4.  $m\angle 2 + m\angle 3 = 180$

\_\_\_\_\_

\_\_\_\_\_

Use the diagram to find the lengths.  $\overline{BP}$  is the perpendicular bisector of  $\overline{AC}$ .  $\overline{CQ}$  is the perpendicular bisector of  $\overline{BD}$ .  $AB = BC = CD$ .



5. Suppose  $AP = 5$  cm. What is the length of  $\overline{PC}$ ?

6. Suppose  $AP = 5$  cm and  $BQ = 8$  cm. What is the length of  $\overline{QD}$ ?

Write the equation described in each case. The first one is done for you.

7. a line perpendicular to  $y = \frac{1}{3}x + 6$

through  $(3, 2)$

slope of the new line:         -3        

equation:          $y = -3x + 11$         

10. a line parallel to  $y = -\frac{1}{4}x - 11$

through  $(4, -5)$

slope of the new line:                                 

equation:                                 

8. a line perpendicular to  $y = 5x - 2$

through  $(-10, 6)$

slope of the new line:                                 

equation:                                 

11. a line parallel to  $y = 3x + 4$

through  $(12, 10)$

slope of the new line:                                 

equation:                                 

9. a line perpendicular to  $y = 2x + 4$

through  $(4, 2)$

slope of the new line:                                 

equation:                                 

12. a line parallel to  $y = 4x + 2$

through  $(-1, 3)$

slope of the new line:                                 

equation: